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Fast NDE of Superconducting Magnet Wires using a Flow-Through SQUID Microscope with Coaxial Current Injection[1] J. MATTHEWS, F.C. WELLSTOOD, University of Maryland, H. WEINSTOCK, Air Force Office of Scientific Research — We have developed a cryocooled high-Tc SQUID microscope for fast non-destructive evaluation (NDE) of long wires, designed for detecting defects in superconducting magnet wire. A feedthrough mechanism pulls the wire at speeds of up to 20 cm/s through a thin mylar tube that separates the room temperature wire from the SQUID. In order to null the magnetic field from bulk current flow the current return path is coaxial with the wire. We present results on test wires and samples of NbTi superconducting wire. By comparison with analytical and numerical models, we extract information from the data, such as defect size and location, and also outline a method for fast automated detection of defects in long wires.

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John Matthews
University of Maryland

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